# UNITED STATES PATENT AND TRADEMARK OFFICE

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/662,539 | 09/15/2003 | John D. Curtis | LOT920030015US1 | 2273 |

| | | | EXAMINER |
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| 23550 | 7590 | 08/23/2006 | SONG, JASMINE |

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| ART UNIT | PAPER NUMBER |
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| 2188 | |

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | Application No. | Applicant(s) |
| **Office Action Summary** | 10/662,539 | CURTIS, JOHN D. |
| | Examiner | Art Unit | |
| | Jasmine Song | 2188 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1) ☒ Responsive to communication(s) filed on *17 July 2006*.

2a) ☐ This action is **FINAL**.　　　2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4) ☒ Claim(s) *1-25* is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-25* is/are rejected.

7) ☒ Claim(s) *4,18-25* is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

## Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some * c)☐ None of:

　　　1.☐ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

## Detailed Action

1.      A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection.  Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114.  Applicant's submission filed on

07/17//2006 has been entered.

## Specification

2.      The lengthy specification has not been checked to the extent necessary to

determine the presence of all possible minor errors.  Applicant's cooperation is

requested in correcting any errors of which applicant may become aware in the

specification.

## Claim Objections

3.      Claims 4,18-25 are objected to because of the following informalities:

in claim 4, line 2, " the cache rules" should be changed to –the discard rules--.

In claim 18, line 1, "a recordable medium" should be changed to – a storage

medium--. (the recordable medium is not defined in the specification, however, the

storage medium is defined in the specification, see page 7).

Claims 19-25 also are objected as they are depended on the objected claim 18.

Appropriate correction is required.

## Claim Rejections - 35 USC § 101

4.      35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5.      Claims 18-25 are rejected under 35 U.S.C. 101 because Claims 18-25 are not limited to tangible embodiments. In view of Applicant's disclosure, specification page 7, lines 2-5, the medium is not limited to tangible embodiments, instead being defined as including both tangible embodiments (see applicant's specification, memory 22 may comprise any known type of data storage; page 7, lines 3-5) and intangible embodiments (see applicant's specification, memory 22 may comprise any known type of transmission media; page 7, line 2). As such, the claims are not limited to statutory subject matter and is therefore non-statutory. For examination purposes, the claims are interpreted as a program product stored on a storage medium which is tangible embodiment.

## Claim Rejections - 35 USC § 103

6.      The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7.      Claims 1,4-8,10-11,13-16,18-19, 21-24 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Lewchuk., US 6,157,993, in view of Bereznyi et al., US

6,453,404 B1.

Regarding claims 1 and 4, Lewchuk teaches that a method for caching data

objects, comprising:

providing a cache (it is taught as a data cache, col.2, lines 51 and col.3, lines 28-

31) having a cache log for the data objects (according to the definition of cache log in

the applicant's specification on page 5, section 0016, a cache log is taught as a profile),

wherein the cache log is adapted to log a history of requests for a data object that is not

stored in the cache (it is taught as the profile records addresses of the data cache

misses experienced during the execution, col.2, lines 48-52 and col.4, lines 33-35).

predicting needed data objects based on the cache log (it is taught as predicting

cache lines corresponding to the foremost addresses within the profile when a profile is

initially accessed, col.3, lines 9-13 and col.4, lines 50-53 and col.14, lines 18-25);

prefetching the needed data objects that are predicted to be needed (it is taught

as prefetching cache line into prefetch cache 246 using the addresses in the profile,

col.14, lines 16-20, and the prefetched cache line within the prefetch cache 246 is

stored into the data cache as shown in Fig.10) into the cache; and

discarding particular data objects from the cache (col.14, lines 43-44 and lines

64-65).

Lewchuk does not teach assigning discard rules to the data objects on a class basis and discarding particular data objects from the cache to a discard queue based on the discard rules.

However, Bereznyi teaches assigning discard rules to the data objects on a class basis (it is taught as assigning the specified expiration time/date for each item and all items that are past the specified expiration time/date are stored in a "delete" list, col.29, lines 58 to col.30, lines 3) and discarding the particular data objects from the cache to a discard queue based on the discard rules (it is taught as delete the items that are past the specified expiration time/date from the cache; col.29, lines 58 to col.30, lines 3 and all items that are past the specified expiration time/date are stored in a Delete list).

It would have been obvious to the ordinary skill in the art at the time the invention was made to utilize the teachings of Bereznyi into Lewchuk's computer system such as assigning discard rules to the data objects on a class basis and discarding particular data objects from the cache to a discard queue based on the discard rules because the previously allocated blocks are now free and available for storage of other data items when a data file is removed from the cache by using the delete method as discussed above (col.47, lines 7-25 of Bereznyi), therefore, speeding up the operation of cache.

Accordingly, one of ordinary skill in the art would have recognized this and concluded that they are from the same field of endeavor (delete the cache line or data items). This would have motivated one of ordinary skill in the art to implement the above combination for the advantages set forth above.

Regarding claims 10,13,18 and 21, Lewchuk teaches that a system for caching

data objects, comprising:

a logger for logging a history of requests for data objects in a cache log

(according to the definition of cache log in the applicant's specification on page 5,

section 0016, a cache log is taught as a profile) that is adapted to log the history of

requests for a data object that is not stored in the cache (it is taught as the profile

records addresses of the data cache misses experienced during the execution, col.2,

lines 48-52 and col.4, lines 33-35);

a predictor for analyzing the cache log (it is taught as predicting cache lines

corresponding to the foremost addresses within the profile when a profile is initially

accessed, col.3, lines 9-13 and col.4, lines 50-53 and col.14, lines 18-25) and

prefetching needed data objects that are predicted to be needed into a cache based on

the history of requests (it is taught as prefetching cache line into prefetch cache 246

using the addresses in the profile, col.14, lines 16-20, and the prefetched cache line

within the prefetch cache 246 is stored into the data cache as shown in Fig.10); and

discarding particular data objects from the cache (col.14, lines 43-44 and lines

64-65).

Lewchuk does not teach assigning discard rules to the data objects on a class

basis and discarding particular data objects from the cache to a discard queue based on

the discard rules.

However, Bereznyi teaches assigning discard rules to the data objects on a class

basis (it is taught as assigning the specified expiration time/date for each item and all

items that are past the specified expiration time/date are stored in a "delete" list, col.29,

lines 58 to col.30, lines 3) and discarding the particular data objects from the cache to a

discard queue based on the discard rules (it is taught as delete the items that are past

the specified expiration time/date from the cache; col.29, lines 58 to col.30, lines 3 and

all items that are past the specified expiration time/date are stored in a Delete list).

It would have been obvious to the ordinary skill in the art at the time the invention

was made to utilize the teachings of Bereznyi into Lewchuk's computer system such as

assigning discard rules to the data objects on a class basis and discarding particular

data objects from the cache to a discard queue based on the discard rules because the

previously allocated blocks are now free and available for storage of other data items

when a data file is removed from the cache by using the delete method as discussed

above (col.47, lines 7-25 of Bereznyi), therefore, speeding up the operation of cache.

Accordingly, one of ordinary skill in the art would have recognized this and

concluded that they are from the same field of endeavor (delete the cache line or data

items). This would have motivated one of ordinary skill in the art to implement the above

combination for the advantages set forth above.


Regarding claims 5,15 and 23, Lewchuk teaches further comprising:

receiving a request for certain data objects and retrieving the certain data objects

from the cache (it is taught as a cache hit if the requested data is present within the

cache, col.2, line 1-2).

Regarding claims 6,16 and 24, Lewchuk teaches that the cache log comprises a relational database (it is taught as a profile/memory pointer list 30 as shown in Fig.1).

Regarding claim 7, Lewchuk teaches that the needed data objects are predicted from a history of requests as tracked in the cache log (it is taught as the cache lines corresponding to the foremost addresses are from the profile, col.14, lines 22-23).

Regarding claims 8,14 and 22, Lewchuk and Bereznyi teaches the claimed invention as shown in independent claims, Bereznyi teaches further comprising dynamically adjusting/updating the discard rules (it is taught as a number of different techniques for deleting data items such as deleting one or more of the LRU data items, col.11, lines 22-37, use time and/or frequency parameters to delete older or unnecessary items form the cache, col.11, lines 38-40). It would have been obvious to the ordinary skill in the art at the time the invention was made to utilize the teachings of Bereznyi into Lewchuk's computer system such as dynamically adjusting the discard rules because this will accommodate a large number of users and makes efficient memory allocation (col.47, lines 64-65 of Bereznyi).

Regarding claims 11 and 19, Lewchuk teaches further comprising a governor (it is taught as a system) for concurrently managing a refresh queue (it is taught as updating profile/memory pointer list) and a discard queue (col.14, lines 64).

8.      Claims 9,17 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Lewchuk., US Patent 6,157,993 and Bereznyi et al., US 6,453,404 B1, in view of

Beyda., US 6,766,422 B2.

Regarding claims 9,17 and 25, Lewchuk and Bereznyi teach the claimed

invention as shown above, Lewchuk and Bereznyi do not teach that the predicting step

comprises predicting a sequence of needed data objects based on time of day and

prefetches the sequence of needed data objects into the cache. However, Beyda

teaches predicting a sequence of needed data objects based on time of day and

prefetches the sequence of needed data objects into the cache (col.4, lines 61 to col.5,

lines 16 and col.5, lines 33-44). It would have been obvious to the ordinary skill in the

art at the time the invention was made to utilize the teachings of Beyda into Lewchuk

and Bereznyi's computer system such as predicting a sequence of needed data objects

based on time of day and prefetches the sequence of needed data objects into the

cache because this will reduce latency as well as traffic (col.2, lines 61-66 of Beyda).

Accordingly, one of ordinary skill in the art would have recognized this and

concluded that they are from the same field of endeavor (prefetching data to the cache

memory). This would have motivated one of ordinary skill in the art to implement the

above combination for the advantages set forth above.

9.      Claims 2-3 and 12 and 20 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Lewchuk., US Patent 6,157,993 and Bereznyi et al., US 6,453,404

B1, in view of Ims et al., US 6,505,200 B1.

Regarding claims 2-3, 12 and 20, Lewchuk and Bereznyi teach the claimed invention as shown above, Lewchuk and Bereznyi do not clearly and specifically teach refreshing the needed data objects from the refresh queue in the cache based on refresh rules. However, Ims teaches refreshing the needed data objects from the refresh queue in the cache based on refresh rules (col.5, lines 37-48 and col.14, lines 29-67 and col.13, lines 56-60).

It would have been obvious to the ordinary skill in the art at the time the invention was made to utilize the teachings of Ims into Lewchuk and Bereznyi's computer system such as refreshing the needed data objects from the refresh queue in the cache based on refresh rules because it will improve the overall system performance (col.14, lines 3-7 of Ims).

Accordingly, one of ordinary skill in the art would have recognized this and concluded that they are from the same field of endeavor. This would have motivated one of ordinary skill in the art to implement the above combination for the advantages set forth above.


10.     When responding to the office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections. See 37 C.F.R. 1.111 (c).

11.     When responding to the office action, Applicants are advised to provide the

examiner with the line numbers and page numbers in the application and/or references

cited to assist examiner to locate the appropriate paragraphs.


12.     Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jasmine Song whose telephone number is 571-272-

4213. The examiner can normally be reached on 7:30-5:30 (first Friday off).

        If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Mano Padmanabhan can be reached on 571-272-4210. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

        Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Art Unit: 2188

Jasmine Song

Patent Examiner

August 16, 2006